

October 17, 2011

**VIA E-MAIL AND OVERNIGHT EXPRESS MAIL**

Mr. S. Craig Lobins  
Regional Manager  
Oil and Gas Management  
Pennsylvania Department of Environmental Protection  
Northwest Regional Office  
230 Chestnut Street  
Meadville, PA 16335

Re:     -Response to Department's May 9, 2011 letter Dimock and Springville Townships,  
          Susquehanna County  
          -Request to Resume Natural Gas Drilling and Well Completion Activities  
          -Consultation Regarding Discontinuation of Temporary Potable Water

Dear Mr. Lobins:

This letter is Cabot Oil & Gas Corporation's response to the Department's letter dated May 9, 2011 ("May 9 Letter").<sup>1</sup> We are hereby renewing our request to resume natural gas drilling and well completion activities in the Dimock/Carter Road Area. In addition, we are seeking your concurrence regarding the discontinuation of the provision of temporary potable water. As further discussed herein, Cabot believes that it is in compliance in all material respects with the Consent Order and Settlement Agreement ("COSA") and that any differences of opinion that may remain regarding Cabot's compliance with the COSA do not pose a risk to allowing Cabot to resume its drilling and well completion activities.

**Background**

As you know, on December 15, 2010 Cabot and the Department entered into the COSA to address and resolve issues related to methane that exist in water supplies along Carter Road in Dimock, Pennsylvania. Another purpose of the COSA was to provide a mechanism for resumption of gas drilling and completion activities and a mechanism to terminate temporary water supplies. Cabot has aggressively investigated the origin of such methane, including extensive sampling of water supplies in areas where no drilling has yet occurred, to determine comparable background levels of methane in the vicinity. Cabot has also engaged third party consultants and prominent experts to conduct numerous studies and evaluations of these water supplies and Cabot has carefully reviewed its drilling practices with the assistance of these and other experts. Much of this work is memorialized in the COSA, but additional work and study have occurred since the COSA was executed. Cabot has shared this work product with the Department and has also made these experts available to meet and discuss the results with Department representatives. Cabot is happy to provide any additional background information that the Department would require.

As is also memorialized in the COSA, Cabot had agreed to temporarily suspend further drilling and hydraulic fracturing activities in the Dimock/Carter Road Area pending the outcome of these studies. Meanwhile, Cabot continues to undertake natural gas well drilling and hydraulic fracturing activities "outside"

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<sup>1</sup> The letter is being sent at this time in accordance with the extension granted by the Department on July 18, 2011, permitting Cabot to submit a response to the May 9 Letter on or before October 17, 2011.

the Dimock/Carter Road Area and this work has proceeded successfully and in compliance with the Department's regulations. Moreover, other producers with comparable practices have been allowed to proceed with drilling and hydraulic fracturing activities in and around the Dimock/Carter Road Area. This shows that drilling and fracing can be conducted in the Dimock/Carter Road Area without impacting water supplies.

On April 14, 2011, Cabot submitted a letter to the Department requesting notice to resume natural gas well drilling and well completion activities in the Dimock/Carter Road Area. Attached to that letter was the necessary supporting information to allow the Department to provide notice to resume activities, as provided for and set forth in the COSA.

In the May 9 Letter, the Department responded to Cabot's request for notice to resume activities in the Dimock/Carter Road Area and noted that Cabot has complied with most of the obligations set forth in the COSA. However, the Department also suggests that Cabot has not achieved full compliance with some of these obligations. Respectfully, Cabot does not agree that it has not fulfilled all of its obligations under the COSA.

In addition, Cabot had previously requested that it be permitted to discontinue the provision of temporary potable water. The Department's May 9 Letter indicates that Cabot has met all of the requirements contained in the COSA for the discontinuation of temporary potable water. For several residents, the Department requested that Cabot continue providing water for the time being. Cabot now requests that the temporary potable water be discontinued for all residents as the groundwater meets all applicable DEP requirements and there is no valid technical reason to continue providing the water.

### **Specific Responses to Items Raised in the May 9 Letter<sup>2</sup>**

#### **I. Compliance with Environmental Laws and Regulations**

The COSA includes a general provision that Cabot agrees to comply with all applicable laws and regulations.

#### **Greenwood 6 Well; Greenwood 7 Well; Greenwood 8 Well**

The Department's May 9 Letter identifies three natural gas wells at the Greenwood well pad for which Notices of Violation ("NOVs") were issued and suggests that issues at those wells are considered a failure to comply with the COSA.

First, these three natural gas wells are located outside the Dimock/Carter Road Area and thus are not subject to the compliance obligations set forth in the COSA. Second, it is Cabot's position that the NOVs should not have been issued for these three wells. Cabot believes that each of these wells was properly installed, cased and cemented in accordance with the Department's extensive regulations and the Department-issued permits. Furthermore, the casing and cementing plans were each individually approved by the Department. Cabot, at the Department's request, completed a 30 day pressure build-up test on the annuli identified in the NOVs. At the end of the 30 day test period the annular pressure for all three wells was 0 psi, again supporting Cabot's position that these NOVs should not have been issued.

Finally, an NOV does not constitute a final agency action that determines whether an issue of non-compliance exists. Rather, an NOV serves as the Department's allegation of a non-compliance issue that can be pursued or otherwise resolved. Indeed, the Environmental Hearing Board has held that an NOV is merely a "provisional, interlocutory, decision[]" that does not require a party to take any action, and therefore is not an appealable action. *County of Berks v. DEP*, 2003 EHB 77.

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<sup>2</sup> The following items respond point-by-point to the items contained in the Department's May 9, 2011 letter.



Consequently, we request that DEP rescind these NOV's or indicate affirmatively that Cabot has complied with the NOV's. Cabot has worked hard to comply with environmental laws and regulations. In a highly regulated industry, it is always possible that a company will violate a provision of the Department's regulations. Such a violation, however, does not indicate a lack of intent to comply with the laws and regulations or a lack of ability to comply. Thus, the implication that Cabot either has not or will not comply with the Department's laws and regulations is unfounded.

## II. Gas in the Annuli of Dimock/Carter Road Natural Gas Production Wells

In the May 9 Letter, the Department states that, "as a general rule, gas (as shown by gas pressure) in an annular space of a gas well indicates that the well has defective, insufficient or improperly cemented casing." This statement is not supported by the comprehensive framework of oil and gas regulations implemented by the Department, which anticipates nominal amounts of gas in the annular space. Specifically,

[a]fter a well has been completed, recompleted, reconditioned or altered the operator *shall prevent surface shut-in pressure* and surface producing back pressure inside the surface casing or coal protective casing *from exceeding the following pressure: 80% multiplied by 0.433 psi per foot multiplied by the casing length (in feet) of the applicable casing.*

25 Pa. Code § 78.73(c) (emphasis added).

Thus, the "general rule" asserted by the Department neither exists nor is supported by the regulations. Rather, Section 78.73(c) provides the standard for assessing the mechanical integrity of gas wells based on an assessment of the critical hydrostatic pressure exerted on the casing seat. Further, 25 Pa. Code § 78.88 (Mechanical integrity of operating wells) establishes pressure testing as a means of assessing mechanical integrity and includes several references to section 78.73(c).

If the surface shut-in pressure of the annulus is less than 80% of the hydrostatic pressure at the depth of the casing seat then a mechanical failure has not occurred. A pressure of less than 80% presents no risk of migration because any gas in the annular space will follow the path of least resistance to the well head and then be vented into a tank system in accordance with Department regulations.

Gas pressure can and often exists in annular spaces and this is no indication of defective cement or casing. The Department's Technical Advisory Board ("TAB") shares this awareness. Cabot's efforts to survey the Technical Advisory Board ("TAB") suggest that at least four of the five members support the notion that surface shut-in pressure should not exceed  $80\% \times 0.433 \text{ psi/ft} \times \text{the casing length (in feet) of the applicable casing string}$ . See 25 Pa. Code § 78.73(c). Thus, the "general rule" asserted by the Department neither exists nor is supported by the TAB or the regulations.

To assert otherwise would require a fundamental and industry-wide attempt to change the Commonwealth's well design criteria and would require considerable input from noted authorities on this topic (i.e., TAB) as well as the various stakeholders involved. None of the wells identified in the May 9 Letter have exceeded the pressure standards set forth in the regulations, except the Teel 7V well. For the Teel 7V well, Cabot is submitting a plan in accordance with the Department's request contained in the May 9 letter.

Further, there is nothing in the Department's regulations that supports the position that 25 Pa. Code § 78.73(c) does not apply to unconventional gas wells. The title of the regulation is "General provision for well construction and operation," 25 Pa. Code § 73, explicitly stating that it applies to all wells. Further, since other regulations explicitly discuss unconventional gas wells and 25 Pa. Code § 78.73(c) does not differentiate between conventional and unconventional wells, the regulation applies to both.

It would appear that in the absence of any more specific regulatory definition of what constitutes "defective, insufficient or improperly cemented casing," operators should look to newly promulgated section

78.88 addressing “Mechanical integrity of operating wells.” That section identifies progressive corrosion, rusting, and equipment deterioration as indicators of mechanical integrity. None of these indicators were present at the wells at issue in the May 9 Letter. Furthermore, section 78.88 establishes pressure testing as a means of assessing mechanical integrity and includes several references to section 78.73(c). As previously noted, none of the wells at issue here, with the exception of Teel 7V (as discussed above), have exceeded the pressure standards set forth in the regulations.

In addition, no provision of section 78.88 provides that the presence of gas in the annular space is *de facto* evidence of a “defective, insufficient or improperly cemented casing.” While section 78.85(a)(5) provides that the cement that is used in well construction should “prevent gas flow in the annulus,” it does not stand for the proposition that there may not be gas present in the annular space. The Marcellus Shale Coalition previously raised this very issue when it provided comments on the Department’s proposed “Instructions for Evaluating Well Mechanical Integrity of Operating Oil and Gas Wells - Form 5500-FM-OGXXXX.”

Moreover, while not specific to oil and gas wells, 25 Pa. Code Sections 78.401 – 78.407, Subchapter H for Underground Storage Wells, recognize the reality that gas is often found in the annular space of a properly cemented well. In recognition of the venting process that then takes place for these types of wells, the Department has set out a maximum allowable amount of venting per day. The small amounts of gas identified in Cabot’s oil and gas wells within the Dimock/Carter Road Area do not come close to reaching the regulatory maximum for underground storage wells. Considering this, the presence of a nominal amount of gas in the annular space is not an indication that Cabot’s oil and gas wells are defective, nor is it an indication that Cabot’s oil and gas wells pose a threat of methane gas migration into nearby water supplies.

Accordingly, Cabot appreciates the opportunity afforded by the Department to discuss technical issues with respect to nominal amounts of gas in the annular space. Cabot urges the Department to recognize that this very common occurrence is not grounds for further delaying the Company’s ability to conduct drilling and hydraulic fracturing activities within the Dimock/Carter Road Area.

**Information Requested by DEP:**

The May 9 Letter identifies the following and requests a response:

[T]he Gesford 2 gas well was one of 14 ‘Defective Wells’ identified by the Department in the 2009 Modified Agreement between the Department and Cabot. Nonetheless, Cabot did not inform the Department within 24 hours of discovery of the gas in the Gesford 2 gas well and in the other gas wells that Cabot tested in November and early December. In fact, Cabot did not inform the Department of this gas in the annular space of the Gesford 2 gas well and other gas wells until *after* execution of the 2010 Agreement. [The Department seeks] a written explanation about why [Cabot] did not inform the Department of these material facts within 24 hours of discovery and before execution of the 2010 Agreement.

May 9 Letter at 3.

**Cabot’s Response:**

With respect to the Gesford 2 gas well, Cabot did not believe and still does not believe that any notice obligations under the regulations were triggered by data indicating the presence of nominal amounts of gas in the annular space. Notably, the gas levels detected at the Gesford 2 well (78 psi) were substantially below the conservative threshold set forth in Pennsylvania’s regulations (i.e., 80% of hydrostatic pressure which would be 359 psi for the Gesford 2 well). Although 25 Pa. Code Section 78.86 discusses “defective, insufficient or

improperly cemented casing,” it is our view that Section 78.86 cannot be used to bootstrap a well that is in compliance with all other Department regulations into a well that is in violation. In other words, it is not Section 78.86 that defines what is a defective, insufficient or improperly cemented casing, but rather that Section merely establishes a reporting requirement.

Cabot has been working directly and closely with the Department throughout the process of evaluating the Dimock/Carter Road gas wells, including taking pressure readings and providing data on several occasions at the Department’s request, all of which it performed in a timely fashion.

**Information Requested by DEP:**

DEP seeks information regarding the Category I and II wells. May 9 Letter at 4.

**Cabot’s Response:**

**Category I Wells**

There are six Category I wells. These wells include:

Brooks 1H  
Ely 4V  
Ely 5H  
Gesford 2  
Ratzel 2H  
Ratzel 3V

Cabot has conducted additional testing of these wells, including determining the annular flow rate, conducting 48-hour pressure buildups on annuli, and running temperature / noise logs on selected wells. But for the Brooks 1H well, Cabot’s additional testing of the Category I wells demonstrate that the wells have a decrease in annular pressure. Further, the temperature / noise logs that have been conducted demonstrate that there is no indication of gas migration. The following table provides a summary of Cabot’s additional testing of the Category I wells, the actions taken, and the action plan (where applicable).

**Category I Gas Wells**

Well Name	Comments	Action Taken	Action Plan
Brooks 1H	Annular pressure increased	Vent Annulus	Cement Squeeze
Ely 4V	Annular pressure zero	Vent Annulus	None
Ely 5H	7x9=1 psi, 4x7=0 psi Temp/noise log shows no gas migration	Vent Annulus	None
Gesford 2	Annual pressure decreased Temp/noise log shows no gas migration	Vent Annulus	None
Ratzel 2H	Temp/noise log shows no gas migration	Vent Annulus	None
Ratzel 3V	7x9=0 psi, 4x7=2 psi Temp/noise log shows no gas migration	Vent Annulus	None

On September 30, 2011, Cabot submitted a proposed workover procedure to the Department's North Central Regional Office to perform a cement squeeze on the Brooks 1H well. On October 13, 2011, Cabot submitted a minor revision to the workover procedure to the Department.

Further detailed information on the Category I wells is provided in slides 174 – 207 of the PowerPoint Presentation included as Attachment A.

### **Category II Wells**

There are eight Category II wells. These wells include:

Costello 1V  
Ely 1H  
Grimsley 1V  
Heitsman 4H  
Hubbard 5H  
Hull 1H  
Teel 6V  
Teel 13V

Like the Category I wells, Cabot has conducted additional testing of the Category II wells, including determining the annular flow rate, conducting 48-hour pressure buildups on annuli, and running temperature / noise logs on selected wells. Cabot's additional testing of the Category II wells demonstrate that six of the wells have a decrease in annular pressure, one well had a minor annular pressure increase (to 6 psi), and the remaining well had an annular pressure increase of 21 psi.

The following table provides a summary of Cabot's additional testing of the Category II wells, and the actions taken.

**Category II Gas Wells**

<b>Well Name</b>	<b>Comments</b>	<b>Action Taken</b>	<b>Action Plan</b>
Costello 1V	4x7 pressure increased	Vent Annulus Ran temp/noise log Shows no gas migration	None
Ely 1H	4x7 pressure decreased	Vent Annulus	None
Grimsley 1V	Annular pressure decreased, 5x9=1 psi	Vent Annulus	None
Heitsman 4H	Annual pressure flat	Vent Annulus	None
Hubbard 5H	7x9=6 psi, minor increase, 4x7=32 psi, minor decrease	Vent Annulus	None
Hull 1H	Annular pressure decreased	Vent Annulus	None
Teel 6V	Annular pressure decreased	Vent Annulus	None
Teel 13V	Annular pressure decreased	Vent Annulus	None

Further detailed information on the Category II wells is provided in slides 208 – 247 of the PowerPoint Presentation included as Attachment A.

**Information Requested by DEP:**

DEP seeks information regarding the Category III wells. May 9 Letter at 4.

**Cabot's Response:****Category III Wells**

It is our understanding from the meeting held with DEP on June 7, 2011, that Cabot has provided adequate information and the Department does not consider the wells in Category III to be in violation. Cabot will check the Teel 7V well, pursuant to the procedure to be submitted to the Department, to check for a well head seal leak. Other than for the Teel 7V well, no further information is required to be provided to the Department. The following table provides a summary of Cabot's additional testing of the Category III wells, the actions taken, and the action plan (where applicable).

**Category III Gas Wells**

Well Name	Comments	Action Taken	Action Plan
Ely 7H	Zero annular pressure	Vent Annulus	None
Gesford 1V	Annular pressure decreased, 5x8 = 1 psi	Vent Annulus	None
Hubbard 1V	Zero annular pressure	Vent Annulus	None
Kelley, P. 1H	Annular pressure decreased	Vent Annulus	None
Ratzel 1H	Annular pressure decreased	Vent Annulus	None
Teel 2V	Annular pressure increased on 4x7, TOC below shoe	Vent Annulus	Monitor flow
Teel 5V	7x9= 0 psi, 4x7= 3 psi	Vent Annulus	None
Teel 7V	Annular pressure increased	Vent Annulus	Check for wellhead seal leak

Further detailed information on the Category III wells is provided in slides 248 – 287 of the PowerPoint Presentation included as Attachment A.

**Information Requested by DEP:**

The May 9 Letter identifies the following and requests a response:

[F]or each Cabot Gas Well in Categories I-III, the Department requests that Cabot: submit sufficient written information to show that Cabot has completed all corrective actions necessary to fix the leak, and/or fix the defective, insufficient, or improperly cemented casing, and/or other defect in



compliance with 25 Pa. Code § 78.86, and that tests show no gas pressure for the well; or submit a written plan, for approval by the Department, that identifies the specific corrective action that Cabot will take to fix the leak, and/or fix the defective, insufficient, or improperly cemented casing, and/or other defect in compliance with 25 Pa. Code § 78.86.

May 9 Letter at 4.

**Cabot's Response:**

As a general response, see our statement at the beginning of this section. Cabot disagrees that the mere presence of any gas in the annular space means that the casing is "defective, insufficient, or improperly cemented."

Further, the information provided above concerning the Category I and II wells demonstrates that Cabot has either completed all corrective action regarding the wells, or has submitted a plan for corrective action to the Department. The following additional information responds to the Department's request.

**Retesting of pressure in certain annuli**

During the meeting with the Department on October 11, 2011, Department staff requested that Cabot re-test the pressure in particular annuli of certain gas wells where Cabot's recent pressure testing data showed anomalous results. These gas wells / annuli include:

<b>Gas Well</b>	<b>Annuli</b>
Costello 1V	4 x 7
Heitsman 4H	4 x 9
Hubbard 5H	4 x 7 and 7 x 9
Hull 1H	5 x 9
Teel 6V	4 x 7
Ratzel 1H	4 x 7

Cabot will re-test the pressure in the above-named wells / annuli using a 72-hour pressure test. Cabot will provide the Department with the results of the re-testing.

**Additional information regarding cement squeezes**

During the meeting with the Department on October 11, 2011, Department staff requested that Cabot provide to the Department additional information regarding gas wells where Cabot has performed a cement squeeze. Specifically, Department staff requested that Cabot provide the specific location within each wellbore that was squeezed.

Cabot is providing additional information responsive to the Department's request as an attachment to this letter. The information is included as Attachment B.



### **III. Screenings and Sampling of Water Supplies**

Cabot's contractor and DEP-certified laboratory have been regularly testing 7 water supplies out of the 18 identified in the COSA. Of the remaining 11 wells, all are plaintiffs and only six (6) have regularly allowed Cabot to sample. Three (3) of the plaintiffs have refused all efforts to sample their water and two (2) on occasion have permitted sampling. The May 9 Letter requests that Cabot again seek plaintiffs' counsel's consent for access to the remaining plaintiffs' homes to conduct water and CGI testing.

#### **Information Requested by DEP:**

DEP requests that "Cabot meet with the current Attorneys for the Appellants and take any and all other reasonable action necessary to obtain the Appellants' consent to assess their properties to conduct the water sampling and well head screening as required under Paragraph 5.b of the 2010 Agreement." May 9 Letter at 5.

#### **Cabot's Response:**

By letter dated June 1, 2011, Cabot again asked plaintiffs' counsel for permission to conduct the testing of the plaintiff property owners' water supplies. In response, plaintiffs' counsel again refused to permit Cabot or its contractors, including Quantum Laboratories, to enter their property to conduct water sampling and CGI testing. At plaintiffs' counsels' request, Cabot identified another third-party water testing company for the plaintiffs' counsels' consideration. Cabot will promptly notify the Department if and/or when plaintiffs' counsel responds to Cabot's proposal.

On October 14, 2011, counsel for the plaintiffs advised that his clients would now provide Cabot access in order to conduct testing of their water.

#### **Information Requested by DEP:**

DEP states the following:

If, within forty (40) days of the date of this letter, Cabot provides sufficient information in writing, to show that, after meeting(s) and other reasonable actions by Cabot, the current attorneys for the Appellants continue to deny Cabot the necessary access, the Department will consider the option of the Department obtaining access from the Appellants and conducting the water sampling and well head screening at their properties in accordance with Paragraph 5.b. of the 2010 Agreement. However the Department will consider this option only upon Cabot's agreement, in writing, to reimburse the Department within thirty (30) days of receipt of the invoice for all applicable costs incurred by the Department for the previous month.

May 9 Letter at 5-6.

#### **Cabot's Response:**

Cabot intends to communicate immediately with plaintiffs' counsel to obtain access for testing in accordance with counsel's October 14, 2011 e-mail. If such effort is unsuccessful, Cabot will request that the Department obtain access to Appellants' respective properties and conduct sampling, or assist Cabot in obtaining access to Appellants' respective properties. Cabot agrees to reimburse the Department within thirty days of receipt of an invoice for reasonable expenses incurred in obtaining access to Appellants' properties and sampling (if conducted by the Department).

#### **IV. Ely 2H and Ely 6H Gas Wells**

Cabot agrees with and appreciates the Department's acknowledgement that the Ely 2H and 6H wells are in compliance with the COSA.

#### **V. Escrow Funds and Temporary Water**

##### **a. Cabot's Compliance with the COSA Escrow Fund Obligations**

The Department contends that Cabot failed to timely fund an escrow account. Exhibit D of the COSA expressly identifies only 18 property owners and the corresponding dollar amount that Cabot was required to fund for each of those property owners. Cabot funded each of those 18 escrow accounts on January 14, 2011, within the time set forth in the COSA. On January 19, 2011, Cabot advised the 18 property owners identified on Exhibit D of the COSA that Cabot had funded the escrow accounts and provided instructions for obtaining the funds. Thus, Cabot had fully complied with its escrow funding requirements under the COSA.

The Department later informed Cabot that a tenant (and son) of one of the property owners had been inadvertently excluded from Exhibit D. Cabot then worked closely with the Department to address promptly the concern and subsequently funded a nineteenth escrow account with a portion of the funds escrowed for the owner of the subject property. It is not clear what more Cabot could or should have done under these circumstances.

Thus, we request that you rescind the suggested civil penalty under these circumstances.

##### **b. The Department's Request that Cabot Continue to Supply Temporary Potable Water and Cabot's Request that DEP permit the termination of Temporary Potable Water**

##### **Termination of Temporary Potable Water**

Cabot appreciates the Department's acknowledgement that Cabot has complied with its obligations under Paragraphs 6.b. through 6.f. of the COSA as relates to the restoration and replacement of water supplies. However, in its May 9 letter, the Department requested that Cabot continue to provide temporary potable water to Dimock/Carter Road residents.

As you know, Cabot has been providing temporary supplies of fresh water to many residents in the Dimock area for many months and, in some cases, for years. Some of the temporary water supply systems were installed in January 2009. Others were installed or began<sup>3</sup> later. During the past few months, at my direction, Cabot has undertaken a careful review of this temporary water supply situation. I have spoken with the Cabot professionals and the third-party experts who have been involved with the water supply concerns in Dimock, reviewed their reports and I also have reviewed the history of the various Department enforcement actions and settlements.

Furthermore, Cabot's extensive evaluations of undrilled areas throughout Susquehanna County demonstrate that pre-existing, naturally-occurring methane is common in groundwater. Specifically, data from approximately 2,000 pre-drill samples demonstrate that 80% of groundwater samples have detectable levels of pre-existing methane.

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<sup>3</sup> These temporary water supplies have been delivered or arranged using different containers or methods as selected by the homeowners. In some cases, Cabot has arranged for deliveries of bottles of drinking water, since that was the preference of the homeowner. In other cases, whole house systems have been installed and plumbed into homes so as to temporarily substitute the source of fresh water by a connection to a homeowner's water well.

As a result of this review, we have reached several conclusions. First, these temporary water supplies were initiated because of a concern for potential impacts to permanent water supplies. Cabot unilaterally arranged for the first temporary water supplies when it decided in January 2009 to provide whole house temporary water supplies to four homes on Carter Road in Dimock. Second, Cabot installed those systems because Cabot was informed that there was a safety concern and it was not immediately clear that Cabot was not the cause of that safety concern. I am proud to work for a company that responds in this fashion. We made sure that these four homes were safe, even if these temporary measures later turned out to be unnecessary. Third, subsequently, it was decided that several more homes and homeowners should receive temporary water supplies – and this decision was later memorialized in a settlement agreement. Specifically, the COSA identified nineteen<sup>4</sup> Dimock-area property owners (the “Property Owners”) who were to continue to receive temporary water supplies until certain conditions were met. Cabot and the Department had the same interest in mind – to put temporary measures in place to ensure the safety of homeowners and residents while scientific studies could be completed and, based upon those studies if or where necessary, permanent remedies could be implemented. Fourth, now that those studies are complete, and for other reasons discussed below, we have concluded that it is appropriate to discontinue the temporary water supplies.<sup>5</sup>

**Consequently, Cabot is writing to inform you that it seeks the Department’s concurrence to discontinue deliveries of bottled and bulk fresh water to the Property Owners effective November 30, 2011.** The Property Owners’ permanent water supplies have been repeatedly tested by Department-approved, Pennsylvania-certified professional laboratories and the results confirm that the water supplies are safe to drink and are safe to use for residential purposes (bathing, drinking, laundry, showering, dishwashing, etc.) relative to the parameters analyzed. The various test results were submitted to the Department via e-mail on October 12, 2011, and are enclosed with this letter as Attachment C.

All of the identified substances present in the Property Owners’ water supplies are at levels below the Department’s and EPA’s primary drinking water regulations maximum contaminant levels, established to protect the public health. To the extent that there are various miscellaneous elements, metals or minerals present in the water supplies, Cabot has discussed these results with its professional environmental consultants who compared the results with those from other water wells in Susquehanna County and from adjacent counties in areas where natural gas well drilling has yet to occur. Our professional consultants confirm that the substances found in the Dimock water supply are typical of what is found in these other undrilled areas. The presence of any of these constituents may be naturally-occurring or caused by other activities, but they are unrelated to natural gas exploration and production activities.

Thus, the primary reason to discontinue these temporary water supplies now is, simply, that they are no longer needed (and have not been necessary for quite some time or never needed). As mentioned above, each of the water wells have been professionally sampled and professionally tested on multiple occasions over many months by independent, state-approved environmental testing laboratories and this testing confirms that the water is safe to use and to drink relative to the parameters analyzed. To the extent that there is any concern with the detectable presence of methane in some of these water wells (as you know, there are no known health effects associated with the ingestion of water containing methane), Cabot either has installed or remains

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<sup>4</sup> As noted on page 8 of this letter, the COSA identified eighteen property owners. The parties included a nineteenth property owner upon the realization that one property owner had been inadvertently excluded.

<sup>5</sup> We appreciate that the Department earlier confirmed in the May 9 Letter that Cabot had satisfied the restoration and replacement of water supplies requirements under the COSA section entitled “Settlement of Restoration/Replacement Obligation,” paragraphs 6.a through 6.f,. Thus, we believe that pursuant to paragraph 6.c, Cabot was officially informed that it could cease further efforts related to provision of temporary water supplies for the Property Owners.



willing to install a whole-house methane mitigation water treatment device that removes methane from the water to a level of 5 mg/l (5 parts per million) or less.

To effectuate discontinuance of temporary water supplies, on or before November 1, 2011, Cabot will send written notices to the Property Owners (through counsel as necessary). In that notice, Cabot will inform each Property Owner that, for a period of sixty days, a professional plumber will be available to reconnect water well supplies at no expense to the Property Owner and, if requested, to install a whole house methane removal system, again at no expense to the Property Owner. Homeowners who accept this offer, in writing, prior to November 30, 2011 will continue to receive temporary water supplies until the work is completed, unless Cabot determines that any delay in scheduling the work is the result of failure to allow access on a reasonable schedule. Cabot will explain in the notice that, for those Property Owners who refuse to allow testing of their permanent water well supply, Cabot will discontinue deliveries at its earliest opportunity, and will not wait until November 30, 2011 to discontinue deliveries of fresh water.

Cabot seeks the Department's concurrence in this request.

#### **VI. Status of Request for Notice to Resume Drilling/Hydro-fracturing Within the Dimock/Carter Road Area**

We disagree with the Department's position that Cabot may not begin any "hydro-fracturing" or new drilling in the Dimock/Carter Road Area until the Department receives and approves further information and/or remedial work. In the May 9 Letter, the Department attempts to apply different standards and conditions beyond those expressly established in the COSA. Cabot, however, has complied with the COSA.

As is discussed above, there has never been a basis or reason to interrupt hydraulic fracturing and thus notice to resume this work should be provided immediately. In fact, the Department has publicly stated that hydraulic fracturing is neither a suspected or actual cause of any groundwater/water supply issue. Indeed, other drilling companies *currently* are drilling and conducting hydraulic fracturing activities within the Dimock/Carter Road Area – the same area that Cabot is precluded from.

In addition, Cabot has successfully proceeded with the drilling and fracing of new gas wells outside the Dimock/Carter Road Area in compliance with Department regulations. Cabot and the Department have worked closely to develop and implement drilling, casing and cementing approaches that meet or exceed both the prior and newly-revised regulations. Thus, gas drilling is occurring all around the Dimock/Carter Road Area without any threat to water supplies. Cabot should be permitted to resume this work in the Dimock/Carter Road Area.

#### **Additional Information Discussed in October 11, 2011 Meeting**

##### **1. Background on methane concentration**

The Upper Devonian age Catskill formation is charged with pre-existing natural gas that is naturally occurring and that pre-exists oil and gas drilling activity. As a result of erosion, the Catskill formation crops out and forms the bedrock throughout most of Susquehanna County. In other portions of Susquehanna County, the Catskill formation underlies layers of glacial till and/or recent alluvium. Valleys and drainages in Susquehanna County are developed parallel and coincident with joints and fractures in the Catskill bedrock. Furthermore, organic material contained within the sandstones and siltstones of the Catskill formation has matured through deep burial over geologic time and has reached a maturation level sufficient to produce dry methane gas from the organic material. The naturally occurring 'stray gas' is now contained within the various lithologic layers of the Catskill formation located at or near the ground surface in Susquehanna County. Based upon Cabot's (1) direct observation and measurement of shallow, background, stray gas while drilling gas wells and from locating at least one natural gas seep in outcrop, (2) interviews with experienced water well drillers and long time resident Citizens in Susquehanna County and, (3) data collected from extensive review

of the technical and popular literature, it is indisputable that the occurrence of the 'stray gas' is a natural phenomenon in northeast Pennsylvania. See PowerPoint slides 13-21, Attachment A.

Most water wells in Susquehanna County are drilled into the Catskill formation to a depth sufficient to encounter water production rates to supply a single family home and also penetrate the sandstone and siltstone layers in the Catskill bedrock that can contain 'stray gas.' Based upon the sampling and mapping of the dissolved methane in more than 1800 water wells that produce from the Catskill formation and interviews with area drillers and homeowners, the measurement of 'stray gas' in the water wells of the region is observed to have a higher rate of occurrence in water wells located in valleys. The interpretation of data from isotopic measurements from these water wells also shows that the source of the 'stray gas' is the Upper Devonian age rocks of the Catskill formation (and not Marcellus shale gas). In addition, water wells that produce from the glacial till or alluvium may or may not have as much methane as water wells drilled into the Catskill formation and based upon the interpretation of isotopic measurements from these types of water wells that do contain methane, the 'stray gas' found in these water wells is biogenic in origin (or stray Catskill formation gas).

The background levels of naturally occurring methane measured in water wells in Susquehanna County is highlighted in Attachment D.

The data used to generate the above map is included in this response as Attachment E. The data demonstrates the presence of naturally occurring methane in literally thousands of locations in Susquehanna County. Importantly, the geographic distribution patterns of pre-existing methane in areas where there has been no oil and gas drilling activity is statistically equivalent to the methane concentrations within the Dimock / Carter Road Area.

## **2. Methane concentrations fluctuate naturally**

Methane concentrations in water fluctuate naturally based on many factors. These factors include the domestic use of water, precipitation and the hydrostatic column of a water well, the seasonal fluctuation in aquifer levels, barometric pressure (impacting head space gas), the presence of a snow / ice cap, the maintenance of a water well, and the use of surrounding water wells.

Thus, the background of methane concentration is a range and not a fixed number. The variability of methane concentrations is indicative of this background range. The water well data collected by Cabot over the last several months (and in some cases years) illustrate this variability.

## **3. There is no correlation between methane concentrations and the concentration of aluminum, iron, manganese, and pH.**

Cabot has collected water sampling data on the water wells throughout the Dimock / Carter Road Area. The data include extensive information on the concentration of methane, in addition to the concentration of metals such as aluminum, iron, manganese, along with pH.

Cabot has not identified any correlation between methane concentrations and the concentration of aluminum, iron, manganese, and pH. The lack of any correlation suggests that the concentration of aluminum, iron, manganese, and pH in the samples represents background levels for those constituents.

## **4. Depth of Water Wells**

During the meeting with the Department on October 11, 2011, Department staff raised questions about the depth of certain water wells within the Dimock / Carter Road Area. Although Cabot has sought construction records for these water wells, such records do not exist for all of the wells. In those cases, Cabot has either obtained anecdotal information from the property owner regarding the presumed depth of the water well, or determined that information on the depth of the water well is unavailable. Attached hereto as

Attachment F is a table that sets forth the depth (or presumed depth, where indicated) of the water wells in the Dimock / Carter Road Area.

The data indicate that the depth of water wells within the Dimock / Carter Road Area vary significantly. Further, the presence of e. coli in certain water wells (as demonstrated in the water sampling data supplied to the Department on October 12, 2011) indicates that such wells are under the influence of surface water and/or septic systems.

### **Conclusion**

Cabot wishes to thank the Department for providing Cabot with the opportunity to present this information to the Department. In light of Cabot's compliance with the COSA, we are renewing our request to resume natural gas drilling and well completion activities in the Dimock/Carter Road Area. In addition, we are seeking the Department's concurrence regarding the discontinuation of the provision of temporary potable water.

In closing, please allow Cabot to express its appreciation for the time and attention the Department has invested in this matter.

Sincerely,



Phillip L. Stalnaker  
Vice President, Regional Manager – North Region

### **ATTACHMENTS**

cc: Alisa Harris, Special Deputy Secretary for External Affairs (w/ attachments)  
Scott R. Perry, Deputy Secretary for Oil and Gas (w/ attachments)  
David J. Raphael, Chief Counsel (w/ attachments)